



5-20-04

Docket No. 5625/D01/W&T/TICL/JB

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Re: Inventor(s): Siqing Lu, Yu Chang, Dongxi Sun, Vinh Dang, Michael X. Yang, Anzhong (Andrew) Chang, Anh N. Nguyen and Ming Xi
Title: VALVE CONTROL SYSTEM FOR ATOMIC LAYER DEPOSITION CHAMBER
Serial No.: 10/731,651
Filed: December 9, 2003

Transmitted herewith is:

- ☒ Information Disclosure Statement
☒ PTO Form 1449 with four hundred seven cited references
☒ Return Postcards

FEE CALCULATION

Fee Items	Claims Filed	Included With Basic Fee	Extra Claims	Fee Rate	Total
Total Claims	N/A	- 20 =	-0-	X \$18.00	\$0.00
Independent Claims	N/A	- 3 =	-0-	X \$84.00	\$0.00
Basic Filing Fee				\$740.00	\$0.00
TOTAL FEES					\$0.00

— The Commissioner is hereby authorized to charge \$0.00 to Deposit Account No. 04-1696.

☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 04-1696. A duplicate copy of this transmittal is enclosed.

☒ Please address all future correspondence to:

PATENT COUNSEL
APPLIED MATERIALS, INC.
Legal Affairs Department
P.O. BOX 450A
Santa Clara, CA. 95052

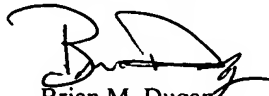
I hereby certify that this correspondence is being deposited with the United States Postal Service as express mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Express Mail Receipt No. EL975550669US

Date of Deposit: May 19, 2004

Signature: 

Respectfully submitted,


Brian M. Dugar
Registration No. 41,720
(914) 332-9081

Express Mail Label No. EL975550669US

PATENTS
5625/D01/W&T/TICL/JB



THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Siqing Lu, Yu Chang, Dongxi Sun, Vinh Dang,
Michael X. Yang, Anzhong (Andrew) Chang,
Anh N. Nguyen and Ming Xi

Serial No. : 10/731,651

Filed : December 9, 2003

For : VALVE CONTROL SYSTEM FOR ATOMIC LAYER
DEPOSITION CHAMBER

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INFORMATION DISCLOSURE STATEMENT

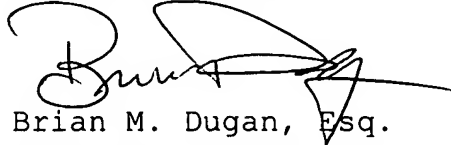
Sir:

In accordance with 37 C.F.R. §§ 1.56 and 1.97,
applicants wish to call the attention of the Examiner to the
references listed on the accompanying Information Disclosure
Statement (Form PTO-1449).

Pursuant to 37 CFR §1.98 (d) Applicants have not
enclosed copies of the cited references as they were previously
cited in a prior application (U.S. Patent Application Serial No.
09/800,881, filed March 7, 2001).

Consideration of the foregoing in relation to this
patent application is respectfully requested.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Brian M. Dugan", with a stylized flourish extending to the right.

Brian M. Dugan, Esq.
Registration No. 41,720
Dugan & Dugan, PC
Attorneys for Applicants
(914) 332-9081

Dated: May 19, 2004
Tarrytown, New York

U.S. Department of Commerce, Patent and Trademark Office (PTO Form 1449 modified)					Docket No. 5625/D01/JB		Serial No. 10/731,651	
SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS CITED BY APPLICANT					Applicant Lu, et al.		Confirmation No.: Unknown	
(Use several sheets if necessary)					Filing Date December 9, 2003		Group Unknown	
Examiner Unknown								

U.S. Patent Documents							
*Examiner Initial		Document Number	Issue Date	Applicant(s) Name	Class	Subclass	Filing Date If Appropriate
	A1	4,813,846	03/21/89	Helms	414	744.1	04/29/87
	A2	4,917,556	04/17/90	Stark et al.	414	217	05/26/89
	A3	4,951,601	08/28/90	Maydan, et al.	118	719	06/23/89
	A4	5,000,113	03/19/91	Wang et al.	118	723	12/19/86
	A5	5,028,565	07/02/1991	Chang, et al.	437	192	08/25/1989
	A6	5,173,474	12/22/1992	Connell, et al.	505	1	03/11/1991
	A7	5,186,718	02/16/93	Tepman et al.	29	25.01	04/15/91
	A8	5,205,077	04/27/93	Wittstock	51	165 R	08/28/91
	A9	5,234,561	08/10/93	Randhawa et al.	204	192.38	08/25/88
	A10	5,259,881	11/09/93	Edwards, et al.	118	719	05/17/91
	A11	5,286,296	02/15/94	Sato et al.	118	719	01/09/92
	A12	5,580,380	12/03/1996	Liu, et al.	117	86	01/30/1995
	A13	5,609,689	03/11/97	Kato et al.	118	719	06/03/96
	A14	5,667,592	09/16/97	Boitnott et al.	118	719	04/16/96
	A15	5,674,786	10/07/97	Turner et al.	437	225	06/05/95
	A16	5,695,564	12/09/97	Imahashi	118	719	08/03/95
	A17	5,730,801	03/24/98	Tepman et al.	118	719	08/23/94
	A18	5,788,447	08/04/98	Yonemitsu et al.	414	217	08/05/96
	A19	5,788,799	08/04/98	Steger, et al.	156	345	06/11/96
	A20	5,801,634	09/01/98	Young et al.	340	635	09/08/97
	A21	5,856,219	01/05/99	Naito et al.	438	241	08/18/97
	A22	5,866,213	02/02/99	Foster et al.	427	573	07/19/97
	A23	5,866,795	02/02/99	Wang et al.	73	1.36	03/17/97
	A24	5,882,165	03/16/99	Maydan et al.	414	217	09/10/97
	A25	5,882,413	03/16/99	Beaulieu et al.	118	719	07/11/97
	A26	5,928,389	07/27/99	Jevtic	29	25.01	10/21/96

Examiner	Date Considered
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.

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U.S. Patent Documents							
*Examiner Initial		Document Number	Issue Date	Applicant(s) Name	Class	Subclass	Filing Date If Appropriate
	A27	6,051,286	04/18/00	Zhao et al.	427	576	08/22/97
	A28	6,062,798	05/16/00	Muka	414	416	06/13/96
	A29	6,071,808	06/06/00	Merchant et al.	438	633	06/23/99
	A30	6,084,302	07/04/00	Sandhu	257	751	12/26/95
	A31	6,086,677	07/11/00	Umotoy et al.	118	715	06/16/98
	A32	6,110,556	08/29/00	Bang, et al.	428	64.1	10/17/97
	A33	6,117,244	09/12/00	Bang, et al.	118	715	03/24/98
	A34	6,140,237	10/31/00	Chan et al.	438	687	04/19/99
	A35	6,140,238	10/31/00	Kitch	438	687	04/21/99
	A36	6,143,659	11/07/00	Leem	438	688	08/27/98
	A37	6,144,060	11/07/00	Park et al.	257	310	07/31/98
	A38	6,158,446	12/12/00	Mohindra et al.	134	25.4	09/04/98
	A39	6,206,967	03/27/01	Mak, et al.	118	666	06/14/00
	A40	6,271,148	08/07/01	Kao et al.	438	727	10/13/99
	A41	2001/0041250	11/15/01	Werkhoven et al.	428	212	03/06/01
Examiner					Date Considered		
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Examiner Unknown					December 9, 2003		Unknown	
Foreign Patent Documents								
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Examiner Unknown					December 9, 2003		Unknown	
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Foreign Patent Documents								
*Examiner Initial		Document Number	Date	Country	Class	Subclass	Translation	
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	B97	05-175143	07/13/1993	JP	H01L	21/205	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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	B153	99/13504	03/18/1999	WO	H01L	21/68	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B154	01/15220	03/01/2001	WO	H01L	21/768	<input type="checkbox"/>	<input type="checkbox"/>
	B155	98/51838	11/19/1998	WO	C23C	16/06	<input type="checkbox"/>	<input type="checkbox"/>
	B156	00/11721	03/02/2000	WO	H01L	29/43	<input type="checkbox"/>	<input type="checkbox"/>
	B157	90/02216	03/08/1990	WO	C23C	14/34	<input type="checkbox"/>	<input type="checkbox"/>
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(Use several sheets if necessary)		Filing Date March 7, 2001	Group Unknown
Examiner Unknown			
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	C1	Ohba, et al., "Thermal Decomposition of Methylhydrazine and Deposition Properties of CVD TiN Thin Films", Conference Proceedings, Advanced Metallization for ULSI Applications in 1993 (1994), pp. 143-149	
	C2	Scheper, et al., "Low-temperature deposition of titanium nitride films from dialkylhydrazine-based precursors", Materials Science in Semiconductor Processing 2 (1999), pp. 149-157	
	C3	Suzuki, et al., "A 0.2- μ m contact filing by 450°C-hydrazine-reduced TiN film with low resistivity", IEDM 92-979, pp. 11.8.1 – 11.8.3	
	C4	Suzuki, et al., "LPCVD-TiN Using Hydrazine and TiCl ₄ ", VMIC Conference (June 8-9, 1993), pp. 418-423	
	C5	IBM Tech. Disc. Bull. "Knowledge-Based Dynamic Scheduler in Distributed Computer Control, (June 1990), pp. 80-84	
	C6	IBM Tech. Disc. Bull. "Multiprocessor and Multitasking Architecture for Tool Control of the Advanced via Inspection Tools" (May 1992), pp. 190-191	
	C7	McGeachin, S., "Synthesis and properties of some β -diketimines derived from acetylacetone, and their metal complexes", Canadian J. of Chemistry, Vol. 46 (1968), pp.1903-1912	
	C8	Solanki, et al., "Atomic Layer deposition of Copper Seed Layers", Electrochemical and Solid State Letters, 3(10) (2000), pp. 479-480	
	C9	NERAC.COM Retro Search: Atomic Layer Deposition of Copper, dated October 11, 2001	
	C10	NERAC.COM Retro Search: Atomic Layer Deposition / Epitaxy Aluminum Oxide Plasma, dated October 2, 2001	
	C11	NERAC Search abstract of "Atomic Layer deposition of Ta and Ti for Interconnect Diffusion Barriers", by Rossnagel, et al., J. Vac. Sci. & Tech., 18(4) (July 2000)	
	C12	Abstracts of articles re atomic layer deposition	
	C13	Abstracts of search results re atomic layer deposition, search dated January 24, 2002	
	C14	Abstracts of articles re atomic layer deposition and atomic layer nucleation	
	C15	Abstracts of articles re atomic layer deposition and semiconductors and copper	
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*Examiner Initial		Including Author, Title, Date, Pertinent Pages, Etc.	
	C16	Abstracts of articles – atomic layer deposition	
	C17	NERAC Search – Atomic Layer Deposition, search dated October 16, 2001	
	C18	Bader, et al., "Integrated Processing Equipment", Solid State Technology, Cowan Pub., Vol. 33, No. 5 (May 1, 1990), pp. 149-154	
	C19	Choi, et al., "The effect of annealing on resistivity of low pressure chemical vapor deposited titanium diboride", J. Appl. Phys. 69(11) (June 1, 1991), pp. 7853-7861	
	C20	Choi, et al., "Stability of TiB ₂ as a Diffusion Barrier on Silicon", J. Electrochem. Soc. 138(10) (October 1991), pp. 3062-3067	
	C21	"Cluster Tools for Fabrication of Advanced devices" Jap. J. of Applied Physics, Extended Abstracts, 22 nd Conference Solid State Devices and Materials (1990), pp. 849 – 852 XP000178141 (<i>ARTICLE ON ORDER – TO BE PROVIDED</i>)	
	C22	"Applications of Integrated processing", Solid State Technology, US, Cowan Pub., Vol 37, No. 12 (December 1, 1994), pp. 45-47	
	C23	Kitigawa, et al., "Hydrogen-mediated low temperature epitaxy of Si in plasma-enhanced chemical vapor deposition", Applied Surface Science (2000), pp. 30-34 (<i>ARTICLE ON ORDER – TO BE PROVIDED</i>)	
	C24	Lee, et al., "Pulsed nucleation for ultra-high aspect ratio tungsten plugfill", Novellus Systems, Inc. (2001), pp. 1-2 (<i>ARTICLE ON ORDER – TO BE PROVIDED</i>)	
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	A1	4,058,430	11/15/77	Suntola et al.	156	611	11/25/1975	
	A2	4,389,973	06/28/83	Suntola et al.	118	725	12/11/1981	
	A3	4,413,022	11/01/83	Suntola et al.	427	255.2	06/21/1979	
	A4	4,486,487	12/04/84	Skarp	428	216	04/25/1983	
	A5	4,767,494	08/30/88	Kobayashi et al.	156	606	09/19/1986	
	A6	4,806,321	02/21/89	Nishizawa et al.	422	245	07/21/1985	
	A7	4,829,022	05/09/89	Kobayashi et al.	437	107	12/09/1986	
	A8	4,834,831	05/30/89	Nishizawa et al.	156	611	09/04/1987	
	A9	4,838,983	06/13/89	Schumaker et al.	156	613	03/18/1988	
	A10	4,838,993	06/13/89	Aoki et al.	156	643	12/03/1987	
	A11	4,840,921	06/20/89	Matsumoto	437	89	06/30/1988	
	A12	4,845,049	07/04/89	Sunakawa	437	81	03/28/1988	
	A13	4,859,625	08/22/89	Nishizawa et al.	437	81	11/20/1987	
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	B1	01/66832 A2	09/13/2001	WO	C30B	16/44		X
	B2	01/40541 A1	06/07/2001	WO	C23C	16/40		X
	B3	01/36702 A1	05/25/2001	WO	C23C	16/00		X
	B4	01/29893 A1	04/26/2001	WO	H01L	21/768		X
	B5	01/29891 A1	04/26/2001	WO	H01L	21/768		X
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	C1	Hultman, et al., "Review of the thermal and mechanical stability of TiN-based thin films", <i>Zeitschrift Fur Metallkunde</i> , 90(10) (Oct. 1999), pp. 803-813.						
	C2	Klaus, et al., "Atomic Layer Deposition of SiO ₂ Using Catalyzed and Uncatalyzed Self-Limiting Surface Reactions", <i>Surface Review & Letters</i> , 6(3&4) (1999), pp. 435-448.						
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	A14	4,859,627	08/22/89	Sunakawa	437	81	07/01/1988	
	A15	4,861,417	08/29/89	Mochizuki et al.	156	610	03/24/1988	
	A16	4,876,218	10/24/89	Pessa et al.	437	107	09/26/1988	
	A17	4,927,670	05/22/1990	Erbil	427	255.3	06/22/1988	
	A18	4,931,132	06/05/90	Aspnes et al.	156	601	10/07/1988	
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	A20	4,975,252	12/04/90	Nishizawa et al.	422	245	05/26/1989	
	A21	4,993,357	02/19/91	Scholz	118	715	12/21/1989	
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	A23	5,082,798	01/21/92	Arimoto	437	108	09/27/1990	
	A24	5,085,885	02/04/92	Foley et al.	477	38	09/10/1990	
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	B7	01/27347 A1	04/19/2001	WO	C23C	16/44		X
	B8	01/27346 A1	04/19/2001	WO	C23C	16/44		X
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	C3	Yamaguchi, et al., "Atomic-layer chemical-vapor-deposition of silicon dioxide films with extremely low hydrogen content", <i>Appl. Surf. Sci.</i> , Vol. 130-132 (1998), pp. 202-207.						
	C4	George, et al., "Surface Chemistry for Atomic Layer Growth", <i>J. Phys. Chem.</i> , Vol. 100 (1996), pp. 13121-131.						
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	A31	5,254,207	10/19/93	Nishizawa et al.	156	601	11/30/1992	
	A32	5,256,244	10/26/93	Ackerman	156	613	02/10/1992	
	A33	5,270,247	12/14/93	Sakuma et al.	437	133	07/08/1992	
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	A37	5,294,286	03/15/94	Nishizawa et al.	156	610	01/12/1993	
	A38	5,296,403	03/22/94	Nishizawa et al.	437	133	10/23/1992	
	A39	5,300,186	04/05/94	Kitahara et al.	156	613	04/07/1992	
	A40	5,311,055	05/10/94	Goodman et al.	257	593	11/22/1991	
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	C5	George, et al., "Atomic layer controlled deposition of SiO ₂ and Al ₂ O ₃ using ABAB... binary reaction sequence chemistry", <i>Appl. Surf. Sci.</i> , Vol. 82/83 (1994), pp. 460-467.						
	C6	Wise, et al., "Diethyldiethoxysilane as a new precursor for SiO ₂ growth on silicon", <i>Mat. Res. Soc. Symp. Proc.</i> , Vol. 334 (1994), pp. 37-43.						
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	A54	5,455,072	10/03/95	Bension et al.	427	255.7	11/18/1992	
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	A56	5,469,806	11/28/95	Mochizuki et al.	117	97	08/20/1993	
	A57	5,480,818	01/02/96	Matsumoto et al.	437	40	02/09/1993	
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	A65	5,601,651	02/11/97	Watabe	118	715	12/14/1994	
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	C9	Klaus, et al., "Atomically controlled growth of tungsten and tungsten nitride using sequential surface reactions". <i>Appl. Surf. Sci.</i> , Vol 162-163 (2000), pp. 479-491.						
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	A73	5,711,811	01/27/98	Suntola et al.	118	711	11/28/1995	
	A74	5,730,802	03/24/98	Ishizumi et al.	118	719	12/27/1996	
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	A76	5,749,974	05/12/98	Habuka et al.	118	725	07/13/1995	
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	A91	5,942,040	08/24/99	Kim et al.	118	726	08/27/1997	
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	C14	Ritala, et al. "Atomic Layer Epitaxy Growth of TiN Thin Films", <i>J. Electrochem. Soc.</i> , 142(8) (Aug. 1995), pp. 2731-737.						
	C15	Elers, et al., "NbC15 as a precursor in atomic layer epitaxy", <i>Appl. Surf. Sci.</i> , Vol. 82/83 (1994), pp. 468-474.						
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	A108	6,207,302	03/27/2001	Sugiura, et al.	428	690	03/02/1998	
	A109	6,248,605	06/19/2001	Harkonen, et al.	438	29	06/02/1999	
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	A111	6,287,965	09/11/2001	Kang, et al.	438	648	02/23/2000	
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	A114	6,306,216	10/23/2001	Kim, et al.	118	725	07/12/2000	
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	C17	Martensson, et al., "Atomic Layer Epitaxy of Copper, Growth & Selectivity in the Cu (II)-2,2,6,6-Tetramethyl-3, 5-Heptanedion ATE/H ₂ Process", <i>J. Electrochem. Soc.</i> , 145(8) (Aug. 1998), pp. 2926-2931.						
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	A120	2001/0034123	10/25/2001	Jeon, et al.	438	643	04/06/2001	
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	B37	196 27 017	01/09/1997	DE	H01L	21/283		X
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	C19	Bedair, "Atomic layer epitaxy deposition processes", <i>J. Vac. Sci. Technol.</i> 12(1) (Jan/Feb 1994)						
	C20	Yamaga, et al., "Atomic layer epitaxy of ZnS by a new gas supplying system in a low-pressure metalorganic vapor phase epitaxy", <i>J. of Crystal Growth</i> 117 (1992), pp. 152-155						
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